Report of the Technical Group on Buffer Stocking Policy of Foodgrains

CONTENTS

		Pages
CHAPTER 1	Introduction	1
CHAPTER 2	Background	3
CHAPTER 3	Issues relating to Foodgrains Stocking Policy	6
CHAPTER 4	Determination of the Size of the Foodgrains Stock	11
CHAPTER 5	Requirements of Storage Capacity	27
CHAPTER 6	Financial Implications	29
CHAPTER 7	Summary of Recommendations	33
ANNEXURE 1	List of Members	43
ANNEXURE 2	Procurement of Foodgrains during 1967-68 to 1981-82	44
ANNEXURE 3	Total Distribution of Foodgrains during 1967-68 to 1981-82	45
ANNEXURE 4	Total Stocks with Public Agencies during 1967 to 1982	46
ANNEXURE 5	Coverage of Public Distribution System	47
ANNEXURE 6	The Owned Storage Capacity with the Public Agencies for Storage of Foodgrains (as on 1-4-1980)	48

APPENDIX 1 Estimates of Total Stocks of Foodgrains on the basis of Demand and Supply Projections . . 49

APPENDIX 2 Regression Analysis of the Demand for Foodgrains for Public Distribution 54

APPENDIX 3 Size of the Total Stocks for Five-Year Period ending 1986-87 55

APPENDIX 4 Government of India, Ministry of Agriculture (Department of Food) Letter No. F. 3(3)-FF-1/77 dated 31st January, 1979 56

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FOOD SECRETARY
Government of India
Krishi Bhavan
New Delhi-110001

November 3, 1982

FOREWORD

The Technical Group on buffer stocking policy was constituted by the Government of India in April, 1981. The Group is now ready with the Report, which though not unanimous, has nevertheless brought out various aspects in proper focus. The differences mentioned in the report reflect the differences on emphasis, ther than the basic material. The situation in respect of foodgrains is dynamic and changes from time to time occur due to arious factors. Therefore, effort has been made to arrive at a ramework which will be a useful tool in the formulation and implementation of food policy. The technique formulated should p in taking care of changing situations arising out of fluctuations demand and supply. It goes without saying that the calcula- ns regarding buffer stock and operational requirements given the report, will require modifications if there is change in the rameters. Therefore, the report needs to be brought up-to-date rom time to time to keep in tune with changed circumstances.

2. I take this opportunity of thanking all the members of the Group who have taken active interest in the deliberations and in the drafting of the Report. Thanks are particularly due to Shri R R. Bhatia, Member Secretary, and his colleagues who have n great pains all through in the preparation and finalization of Report.

Sd/-
B. C. GANGOPADHYAY

REPORT OF THE TECHNICAL GROUP ON BUFFER STOCKING POLICY OF FOODGRAINS

CHAPTER 1

INTRODUCTION

1.1 The Department of Food constituted a Technical Group on Buffer Stocks of Foodgrains *vide* their Memorandum No. 9-3/80-BP.I, dated the 24th April, 1981, to examine the feasibility of the buffer stocking policy of foodgrains for the Sixth Plan period. The terms of reference of the Group were as under :

Terms of Reference :

(a) To report whether in the light of the experience of the past decade :

  (i) the level of national buffer at 15 million tonnes would be adequate; and

  (ii) what should be the level of the operational stocks.

(b) To suggest the grain mix in the buffer and operational stocks;

(c) To report on the role of State Governments in holding a part of these stocks and the manner in which it would be held;

(d) To examine in the light of the constraints of storage and movement felt in the past 2-3 years, the requirements of storage capacity and its spatial distribution; and

(e) To consider and report on any other matter, relevant or incidental to the above points.

1.2 The composition of the Group is given in *Annexure I.*

1.3 The Technical Group held 16 meetings. The dates of the meetings are given below :

1st meeting	12-5-81
2nd meeting	14-12-81
3rd meeting	7-1-82
4th meeting	14-1-82
5th meeting	28-1-82
6th meeting	12-2-82
7th meeting	25-2-82
8th meeting	18-3-82
9th meeting	30-4-82
10th meeting	17-5-82
11th meeting	26-5-82
12th meeting	10-6-82
13th meeting	16-6-82
14th meeting	21-7-82
15th meeting	9-8-82
16th meeting	2-11-82

1.4 The background and the main issues relating to buffer stocks, size and scope of buffer stocks etc. and the findings and recommendations of the Technical Group are indicated in the succeeding paragraphs.

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CHAPTER 2

BACKGROUND

2.1 An adequate level of foodgrains stocks is essential to ensure national food security in a country where agriculture is still susceptible to vagaries of monsoon. The twin policy instruments, namely, price support operations and the public distribution system, have, therefore, been adopted as paramount measures for protecting the interests of both the producers and the consumers.

2.2 The need for building up an adequate level of buffer stocks of foodgrains has long been recognised. Way back in 1966, the Foodgrains Policy Committee had recommended, among other measures, the creation of a buffer stock of foodgrains to provide against the fluctuations in agricultural production. The Working Group of Food Policy for Fourth Plan (1969-74), had also stressed the need for establishing a buffer stock of adequate size for the Fourth Plan period. Accordingly, the Fourth Plan envisaged building up of a buffer stock of 5 million tonnes. This was raised to 7 million tonnes in view of the successive increases in production and progressive improvement in the foodgrains stock.

2.3 The buffer stocking policy was later considered by the working Group on Agriculture Policy, Marketing, Processing, Storage and Warehousing for the Fifth Five Year Plan (1974-79). However, the most comprehensive review of the policy was done by the Technical Group set up by the Department of Food in December, 1975 under the Chairmanship of the then Food Secretary. This Group came to the conclusion that a buffer stock of about 12 million tonnes was required to be built up to meet the situation of normal shortage in two out of three years. The size of the stocks would be 18 million tonnes if fluctuations in supply in 19 out of 20 years were to be provided for. Recognising the important economic and financial implications which the proposed levels of buffer stock would have involved, the Technical Group, however, recommended that a buffer stock of 12 million tonnes should be built up by the end of the Fifth Plan. This stock should be over and above the operational stocks for meeting the requirements of the public distribution system. According to the Technical Group of 1975, the minimum required operational stocks of rice, wheat and coarse grains on 1st April would be 3.5 million tonnes to 3.8 million tonnes and on 1st July the same would be 8.2 to 8.8 million tonnes.

2.4 In the Sixth Plan document, a buffer stock of 15 million tonnes has been envisaged.

2.5 As a result of sizeable imports during 1974-76 and good crops in a number of subsequent years together with a positive price support policy, it was possible to build up substantial buffer stocks in the country. From 3.3 million tonnes of total stocks as on 1st April, 1975, the level of stocks increased to 10.8 million tonnes on 1st April, 1976 and 18.3 million tonnes on 1st April, 1977. As on the 1st July, 1979, the total stocks of foodgrains with the public agencies reached the record level of 21.5 million tonnes. The adequacy of foodgrains buffer stock and the efficiency of the public distribution system were put to a severe test during the drought year 1979-80, the effects of which spilled over to 1980-81 as well. The pressure on the public distribution system started building up immediately after the failure of the monsoon in 1979. The total distribution of foodgrains during the years 1979-80 and 1980-81 was of the order of 13.0 and 13.3 million tonnes respectively. The trend continued in 1981-82 as well when it reached even a higher level of 13.6 million tonnes. During the calendar year 1980 when the distress caused by the drought was at the peak, the total distribution of foodgrains touched an all-time record level of about 15 million tonnes. On the 1st April, 1982, the total stock of foodgrains was 11.1 million tonnes compared with 9.9 million tonnes on 1st April, 1981 and 13.9 million tonnes on 1st April, 1980. (Information regarding procurement distribution and stocks of foodgrains during the past 15 years is indicated in *Annexures* 2 to 4.)

2.6 A notable structural change that took place during this period was the change in the grain mix between the rice and wheat stocks. On 1st April, 1977, the stock of rice was 6.4 million tonnes and that of wheat 11.2 million tonnes. The drawdown of stocks of wheat was faster than that of rice during the drought and the following years. As a result, while rice stocks were somewhat higher at 8.4 million tonnes on 1st April, 1980, 6.7 million tonnes on 1st April, 1981 and 6.4 million tonnes on the same date in 1982, the wheat stocks declined to 5.3 million tonnes on 1st April, 1980, 3.1 million tonnes on 1st April, 1981 and 4.5 million tonnes on 1st April, 1982.

2.7 The experiences of the past few years have also brought out certain interesting features. For example, certain quantities of stocks were always in transit and were, therefore, technically not available for distribution purposes. Similarly, stocks were spread over throughout the country often in quite small lots which could not be mobilised for meeting the distribution requirements. The storage capacity was also put to strain during periods of high level stocks.

2.8 Under this background, the present Technical Group was constituted to go into all these and other related issues relating to foodgrains stocks, storage facilities, problems of implementation of the public distribution system etc.

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CHAPTER 3

ISSUES RELATING TO FOODGRAINS STOCKING POLICY

3.1 The 1975 Technical Group unanimously agreed that "a buffer stock of foodgrains is needed to serve as an insurance against crop failure or other contingencies and to ensure, during inter-seasonal scarcity, supplies of scarce foodgrains. The buffer stock is also needed to safeguard the interests of producers as well as the consumers particularly the vulnerable sections of the population, and help to avoid undue hardship to the labour while making supplies available at reasonable prices in the years of crop failures, and protect the farmer against undue fall in prices in the years of bumper crop". The present Technical Group also felt that the various elements of the rationale for maintaining an adequate level of buffer stock of foodgrains still remained valid.

3.2 The Group would like to underline that while the buffer stock with the Government is necessary for bridging the gap between procurement and off-take from the public distribution system, its adequacy strongly influences the behaviour of the trade in regard to speculative stock-holding or hoarding and profiteering. The trade makes its future calculations of supplies and prices keeping in view the level of buffer stocks, which the Government may use to augment the flow of supplies through the public distribution system. Thus, the buffer stock has significant direct and indirect effects on the stability of prices.

3.3 The very fact of availability of buffer stock lends manoeuvrability to the Government in negotiating favourable terms for imports, if they become unavoidable.

3.4 It may also be mentioned that the cost of carrying buffer stock vis-a-vis importing foodgrains has to be duly weighed against the real cost in terms of foreign exchange required for import of foodgrains. In the context of foreign exchange needed for essential development, requirements, it might be wiser to minimize dependence on imports of foodgrains, even in the wake of setbacks to production resulting from adverse natural conditions. It has also been the experience that imports, if resorted to, have to be spread over a period of time, as due to constraints of infrastructure, the capacity to import foodgrains per month is limited. Further, in order to obtain the benefit of the cheapest price, purchase in the international market has to be made at the most opportune time. This may result in a time gap between the commencement of drought and the actual date of purchase contract for import. These factors have to be taken into account in any reliance on imports for meeting the gap in foodgrains availability.

3.5 The experience of the global food situation over the last ten years indicates that the imports of foodgrains by the developing countries are on the increase. In some of the crop years, the overall levels of stocks with surplus countries have been lower or at best barely at par with the requirements of the world food security. In this context, a strong emphasis on national food security by countries like India is of particular importance. Greater reliance on internal stocks in years of scarcity should be taken as India's contribution to the efforts towards world food security.

3.6 The Group also considered another related issue. Public Works programme is an important instrument for generating employment opportunities particularly in the affected rural areas during the years of drought. The recent experience during the drought year 1979-80 and the following year, has highlighted the important role that the Food for Work Programme/National Rural Employment Programme have played in alleviating the distress caused by drought. The Group felt that the requirement of food stocks for such purposes in drought years has to be taken into account in working out the concept of buffer stocks. These programmes generated substantial employment opportunities and at the same time created productive assets. The Group felt that such public works programmes as are intended only for employment generation in the country even during the normal periods would fall in a separate category and requirements for these programmes will have to be excluded in working out operational stocks.

3.7 The Group also took note of the present policy of the Government to provide the roller flour mills in the country with wheat at specified prices from the public stocks and they are not allowed to purchase wheat from the open market. Any change in this policy will affect the required level of foodgrains stock. It was agreed that the Group should proceed on the assumption that the existing policy of the Government in this respect would continue.

3.8 Another question related to grain mix of the foodgrains stocks. The earlier Technical Group of 1975 had recommended a desirable composition of wheat and rice in buffer stocks as 60 : 40 while the ratio of 75 : 25 was considered more feasible at that time. The experience of the last few years showed that different factors were responsible for the demand and supply of rice and wheat stocks, which in turn affected the composition of the two in the total stocks. For example, during 1970-71 to 1980-81, procurement fell short of distribution in 8 out of 11 years in the case of wheat. In the case of rice, procurement was lower than the quantity distributed in 4 out of 11 years. Evidently, these variations have different impact on the levels of stocks of these two cereals. Moreover, demand for wheat is far more steady and constantly on the increase, and substitution by rice is possible only within narrow limits. The Group, therefore, considered it necessary to study the two major cereals *viz.* rice and wheat separately. In regard to the coarse grains, the Group felt that the quantities involved were not large, and, therefore, these were not considered.

3.9 The Group noted that the implementation of the public distribution system by the Food Corporation of India had shown that certain quantities of stocks had to be kept as minimum base level stocks from the logistic point of view. As the outlets for the public distribution system lie scattered all over the country, stocks get locked up in small lots held in far off places all over India. These small lots cannot be easily pulled out for utilization for public distribution system in other areas in which they may be required. As the offtake from the distribution depots varies month to month, it is not possible to so fine-tune the retention of stocks at different depots as to be sufficient to meet only the local needs served by those distribution points. Another element of the base level stocks is that some quantity of stocks remains actually in transit and is not immediately available for distribution purposes. The Group, therefore, felt that base level stocks which are not possibly operable for actual distribution because of the points mentioned above have to be explicitly taken into account while determining the size of foodgrains stocks in the country.

3.10 In the deliberations of the Technical Group, a Point was raised whether normative nutritional criterion should be applied in working out the total public distribution requirements and hence the stocks of foodgrains. The Group felt that as the public distribution system caters only partially to the overall demand for foodgrain in the country, it may not be easy to arrive at universally acceptable normative estimates. Normative nutritional criteria also are subject to variations from place to place and over time. The Group noted that apart from the nutritional considerations there were other factors having significant bearing on the level of consumption of foodgrain stocks, which are likely to change. It was therefore, felt that the Group should base its recommendations only with reference to the existing parameters.

3.11 The Group also considered the distinction between 'buffer' and 'operational' stocks. Though physically buffer and operational stocks merge into one and are indistinguishable, there is need for notional demarcation between buffer and operational stocks in concept. The buffer stock is meant to be maintained as a measure of food security against crop failures or other contingencies. In this view, buffer stock should include the base level stock and also food security stock to meet situations of shortfalls in normal production and increase in public distribution system requirements resulting from crop failures or other vicissitudes. Operational stocks, on the other hand, cater to the current needs until the next season's procured crop is available for public distribution. Naturally, operational stock level will depend on the monthly rate of off-take in the public distribution system, which is determined by multifarious factors such as the issue price as compared with market price, the quality of the grains, the stocks available with the consumers, Psychology of the buyers, coverage of public distribution system and the general public assessment of the food situation etc. Conceptually, therefore, it will be proper to compute the buffer stock actually available by deducting the operational stock from the quantity of total stock. The mere size of the total stocks will not, therefore, be relevant and fully indicative of food security requirements. One will have to judge the adequacy or otherwise of food security by looking at the actual size of the buffer stock so computed against the normal necessary level thereof.

3.12 The Group also felt that while considering total stocks including buffer stocks and operational stocks, one should refer to the stocks held only by the Government Corporations/agencies for this purpose. Obviously, any stocks held by private traders or other commercial firms, will have to be left out of account, as only the stocks held by the Government Corporations/agencies are available for issue through the public distribution system. Hence reference to buffer/food security stocks or total stocks in the country in this Report should be taken to mean such stocks held/to be held by the Government Corporations/agencies.

3.13 Also, since the size of the required stocks will vary with changing situations, the estimate of buffer and operational stocks cannot be a fixed quantity for all time. Increase in production, increase in population resulting in higher level of consumption, changing food habits, the spread and coverage of the public distribution system, the type of relief provided by Government during period of drought or other calamities, policy for public distribution are all factors affecting the estimates, calling for re-assessment of the needed buffer and operational stocks from time to time. At the same time, in order to facilitate forecasting and planning, frequent changes in the estimate will prove to be a handicap. The Group has, therefore, felt that estimates made by the Group should cover a five-year period. However, necessary adjustments in calculations about requirements of operational stocks may be made even during this period, if the actual rate of monthly off-take indicates a definite trend, upwards or downwards.

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CHAPTER 4*

DETERMINATION OF THE SIZE OF THE FOODGRAINS STOCK

PART I

APPROACH

The Maintenance of adequate level of stocks of foodgrains is an essential precondition for food security. The determination of the size of the total foodgrains stock essential for food security is of crucial importance. The total cost of maintaining foodgrains stock depends mainly on the size of the stock. Therefore, in working out the necessary level of the size of the stock, the Technical Group in its deliberations has to keep in view the need for ensuring adequate food security as well as the cost of maintaining buffer stocks.

4.2 The Technical Group considered various approaches for the estimation of stocks of wheat and rice to be maintained by public agencies. These include :

(a) the estimation based on the extent of variation between net production and demand for foodgrains;

(b) estimation based on the variation in the level of stocks of foodgrains held by the Government; and

(c) assessment based on the gap in the level of public distribution and procurement of foodgrains.

The Technical Group considered each of the above approaches in detail.**

4.3 The approach based on the deviation in net production and demand for foodgrains ('a' above) was based on a simple statistical technique. It involved a *mean* of deviations between production and demand and the *standard deviation* thereof. Two alternative estimates were generated : (i) for meeting a situation arising out of shortfall in supplies in 2 out of 3 years; and (ii) for meeting the deficit in 19 out of 20 years. For (i), the stocks were calculated by taking Mean + 1SD as the criterion and for (ii) it was Mean + 2 SD.

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*A Note of Dissent on the size of the Buffer Stocks as well as on Parts II, III and IV of this Chapter recorded by one of the Members—Dr. Mahfooz Ahmed is at the end of the Report.

**The earlier Technical Group of 1975 had used methods mentioned at (a) and (c) above.

4.4 Estimates of total stocks in the economy on the basis of this approach, and using updated data on production, population, income elasticity of demand and per capita availability of foodgrains during 1976—80, work out to about 12-16 million tonnes for alternative (i) and 19-24.5 million tonnes for alternative (ii) during the Sixth Plan period. These estimates come quite close to about 20 million tonnes arrived at on the basis of the criteria suggested by the FAO i.e. 17-18 per cent of the total consumption requirements. The details of the alternative estimates under this approach based on various assumptions are given in *Appendix* I.

4.5 Besides being simple, the above method allows such factors as population increase and income elasticity of demand for foodgrains during 1976-80, work out to about 12-16 million for cereals, etc. However, the Group felt that this approach generated the estimates of *total* stocks for the economy rather than stocks held by public agencies. The estimation of net production and demand for foodgrains was also not free from limitations. For instance, estimation of net production at 87.5% of gross production, or working out demand for foodgrains by taking expost per capita availability of foodgrains without any information about the level of stocks held by producers and traders and changes therein, are obvious constraints on reliable assessment of stocks. Figures of Government stocks at any point of time are known to Government. However, in this country, the levels of private foodgrains stocks held by producers and traders at various points of time are not available. Therefore, the above approach of ensuring total stocks level for food security of the country cannot be satisfactorily employed.

4.6 Assessment of stocks requirements on the basis of historical changes in the stocks of foodgrains held by public agencies as per approach (b) under para 4.2 above also suffers from various drawbacks. These cannot provide clear cut guidance on future requirements. For example, the stocks held by public sector agencies at a point of time are determined by various factors including the level of production, the scope and coverage of public distribution system, the policies relating to procurement and public distribution, etc. The Group felt that these policies had undergone substantial changes particularly in the later half of the last decade and hence changes in public stocks were an inadequate indication for making future adjustments.

4.7 After considerable deliberations, the Group felt that a consistent and realistic framework for estimating the required public stocks of foodgrains in the country must have relevance to both the levels of procurement and the needs of the public distribution system as per approach (c) in para 4.2 above. The required level of stocks has to be sufficient to maintain the efficacy and the viability of the public distribution system and simultaneously provide enough food security to meet the growing demands thereon in the wake of crop failure.

PART II

BASIC COMPONENTS

4.8 The Group felt that for purposes of both conceptual clarity as well as for proper monitoring and management, the total food stocks should comprise two categories, viz (1) Buffer stocks consisting of (a) Base level stocks and (b) Food security stocks, and (2) Operational stocks.

Buffer Stocks

4.9 *Base level stocks* : As already mentioned in para 3.9 in Chapter 3, the minimum base level stocks would comprise small lots scattered all over the country and not easily available for public distribution in areas where required, as well as stocks in transit. Stocks over and above this level only have relevance to the buffer stock for Nation's food security.

4.10 *Food security stock* : As mentioned in para 4.7 above, approach (c) in para 4.2 will be the realistic method to be followed in making an estimate of food security stocks. The Group felt that the gap between minimum procurement and maximum quantity distributed provided a good indicator for measuring stocks for food security. This gap would vary from year to year depending upon the requirement of the public distribution system and the amount actually procured, both of which are affected by the crop situation during a year. Thus, in a normal year this gap will tend to be small both because of higher procurement as well as lower demand for foodgrains from public distribution. The lower demand for foodgrains from public distribution results mainly due to improved overall supply situation, relatively stable prices and small deviation between fair price and the market price. In a bad crop year, current procurement of foodgrains will fall short of the normal level and may be significantly lower than the requirements of public distribution system. On the other hand, there will be greater pressure of demand/offtake from the public distribution system because the fall in production would cause a rise in the open market prices of foodgrains. The public stocks of foodgrains are, therefore, required to be maintained to meet the contingency of a severe pressure on the public distribution system in a situation of crop failures. As a rough and ready guide, the gap between highest distribution and lowest procurement of foodgrains over a period of time observed in the recent past may be treated as the minimum quantity required to meet any contingency arising out of an imbalance between procurement and demand on the public distribution system.

4.11 The Group wishes to underline the basic fact that the effects of a poor crop on the public distribution system are not confined to a single year alone, but that they spill over to the following year as well. Failure of monsoon directly affects the kharif crops and ultimately the rabi crops as well because of inadequate moisture in the soil and depleted water levels in the reservoirs. Consequently, drought during kharif season leads not only to shortfall in kharif production but, frequently, it also affects rabi production. Crop failure in one year, therefore, leads to distress conditions lasting for more than one year, and their effect by way of higher drawals through public distribution system continues over a period of two years. There are many examples of this phenomenon in the food history of this country. Thus, the failure of Monsoon in 1979 led not only to lower production of paddy and coarse grains in 1979, but also wheat in 1980. The replenishment of stocks from higher production of wheat, which was partial, could come only in the next rabi procurement season in 1981 (April-June). Therefore, there was need for sufficient stocks of wheat to meet the needs of higher offtake not only in 1979-80, but during the year 1980-81 as well, till the rabi procurement of 1981. Similar is the case of rice. The experiences in 1965-66 and 1966-67 were much worse. Hence in computing the stocks necessary to take care of one year of crop failure, this fact should be taken into account. These would be the stocks necessary for the food security of the country. Not to build up stocks to that level would amount to taking grave risks with the security of Nation in so sensitive a field as food.

Operational Stocks

4.12 These are stocks required in a year for the smooth running of the public distribution system till the quantities procured from new crop actually become available for distribution.

PART III

DETERMINATION OF THE SIZE OF STOCKS

4.13 A consistent framework for estimating the size of public stocks of rice and wheat is provided by the following simple relation which distinguishes three elements of stocks, namely, base level stocks, food security stocks and operational stocks for running the public distribution system efficiently :

$$S = A + n\,(d) + t\,(fd)$$

Where S stands for the total required stock, A stands for base level stock, (d) stands for the maximum gap between procurement and the amount distributed for providing security against crop failure, (fd) for average monthly amount distributed through public distribution, n for the number of years for which security is to be provided for and t for number of months for which operational stocks have to be kept for fully meeting the requirements of the public distribution system at a point of time during the year.

4.14 Having explained the basic conceptual framework, the Group proceeded to determine the quantitative parameters of the various components of the stocks. As discussed in para 3.8, the stocks of wheat and rice have been estimated separately.

Buffer Stocks

4.15 As already mentioned, the buffer stocks comprise the two components of (a) base level stocks, and (b) Food security stocks.

(a) *Base Level Stocks*

4.16 The Group felt that it may not be easy to determine the level of base level stocks except through informed judgment based on past experience. In light of experience of the Food Corporation of India in handling drought situations and situations of heavy offtake through the public distribution system in recent years, it was agreed that the base level stocks may be adopted at the level of 1.2 million tonnes in respect of wheat and 1.0 million tonnes in respect of rice.

(b) *Food Security Stocks*

4.17 It has already been mentioned that in computing the food security stocks, the gap between the maximum distribution and minimum procurement should be a good indicator for measuring the stocks necessary for Food Security. The Group, therefore, considered the quantum of maximum gap between the quantity procured and distributed during the last five years.

4.18 It has been the experience that during a drought year while the pressure on distribution goes up considerably, the quantity procured comes down drastically. In the case of rice, the procurement year (October-September) normally covers the drought year which occurs mainly on account of failure of the south-west monsoon. The failure of rains during the period June to September leads to an increase in the offtake both through the public distribution system and under programmes like Food for Work/NREP from September onwards. The procurement season starts from October. Therefore, the years of high distribution and low procurement almost coincide with the same drought year. But in the case of wheat while the effect of drought by way of increase in the offtake of wheat is felt from August-September onwards, the effect on procurement by way of decrease is felt only by the next procurement season, namely, starting from next April onwards. Thus, the periods of high distribution and low procurement fall in two wheat marketing seasons though they pertain to the same drought year. As during the last five years, the lowest procurement of wheat (marketing year 1977-78) was only slightly lower than the procurement level in 1980-81 which also followed the drought year of 1979-80, the Group decided to take a cautious view and adopted the maximum observed gap between the amount distributed and the amount procured in any of the last five years for estimating the stocks for food security.

4.19 In the case of wheat, the maximum distribution through the public distribution system during the last five years took place in 1979-80 (April-March) and was of the order of 8.04 million tonnes, while the lowest quantity procured during this period was in the year 1977-78 (April-March) of the order of 5.16 million tonnes. Thus the maximum annual gap between the distribution and procurement of wheat comes to 2.88 million tonnes. Similarly, in the case of rice, the maximum distribution through the public distribution system during the last five years was in the year 1979-80 (October-September) of the order of 6.16 million tonnes while the minimum procurement of rice was also in the same year (October-September) to the extent of 3.85 million tonnes only. Thus the maximum gap for rice worked out to 2.31 million tonnes. As already mentioned in para 4.11 above, for one crop failure, stock coverage has to extend over two years. Therefore, in the formula indicated in para 4.13 above, the value of 'n' for one crop failure should be taken as n=2.

4.20 Based on the above considerations, the buffer stocks of rice and wheat work out to 5.6 million tonnes rice and 7.0 million tonnes of wheat as presented in Table 1 below :–

Table 1 below :—

Table 1

Estimated Requirements of Buffer Stocks

	(Million tonnes) Rice	 Wheat
A. **Base level stocks**	1·0	1·20
B. **Food Security Stocks**		
(i) Maximum Distribution . . .	6·16*	8·04**
(ii) Minimum Procurement . . .	3·85*	5·16*
(iii) Maximum observed gap between distribution and procurement . . .	2·31	2·88
(iv) Requirement on the basis of n=2 (as indicated in para 4·19)	4·62	5·76
Total Buffer stocks (A+B) . . .	5·62	6·96
or	5·6	7·0
Total Rice+ Wheat . . .	12·6	

*Observed in 1979-80.
**Observed in 1977-78.

Note:—Marketing year for-

Rice	October—September
Wheat	April-March

Operational Stocks

4.21 The offtake for the public distribution system will depend largely on the coverage of population, the relative prices in the open market as well as the changes in the level of per capita private consumption expenditure and similar other factors. Therefore, it was felt that simple extrapolation of trend or use of averages for a certain period may not correctly reflect the actual requirements of the public distribution system in the future. A more systematic method of estimating the demand for public distribution should, therefore, be adopted. Based on the time series data from 1970-71 to 1980-81, an attempt was made to establish a quantitative relationship between the quantity of foodgrains distributed through public distribution system and the independent variables indicated above. On the basis of regression analysis, an estimate has been made regarding the quantities of wheat and rice required for public distribution system for the year 1982-83, the middle of the Sixth Five Year Plan. (Details given in *Appendix* 2). The Group felt that the estimated requirement for the middle of the Sixth Five Year Plan could be taken as the workable basis in computing the requirements for operational purposes for the entire period of the Sixth Plan. In estimating these requirements, it was assumed that the number of fair price shops would grow at the rate of 7% per annum. The growth rates assumed for population and per capita private consumption expenditure were 2.26% and 10.0% per annum respectively. On the basis of the above, the estimates of the operational requirements per month have been put at 4.90 lakh tonnes of rice and 7.00 lakh tonnes of wheat for the Sixth Plan period

4.22 Having worked out the monthly operational requirements to be adopted for the Sixth Plan period, the Group considered the principle which should be followed for working out the requirements of operational stocks of foodgrains at different points of time during the year. The smooth running of the public distribution system requires that at the beginning of the procurement season, sufficient stocks should be available with the public agencies in order to meet the requirements of public distribution till the procured stocks are available.

4.23 The Group felt that at the commencement of the procurement season, certain minimum stocks of wheat and rice over and above the normal level should be available to take care of the time lag between the procurement from the new crop and its actual availability for distribution. The 1975 Technical Group had considered this point and recommended two months' requirements, over and above the prescribed stock levels, to be available for this contingency. Experience, however, has shown that the time lag between procurement and physical availability of the stocks at the distribution points is more than two months. There are a number of factors such as the time lag between arrival and procurement in the mandies, the spread of procurement operations over a period of 3 to 4 months, constraints in the movement and despatch of stocks from the procurement centres, transportation through railways and their conveyance to the various storage points, which account for this time lag. In the case of paddy there is a further problem of shelling it and making rice available for distribution. For all these reasons, the Group considered it advisable to recommend that at the commencement of procurement seasons of wheat and rice, a 3-month requirement of stocks should be maintained for running the public distribution system without any disruption.

4.24 The procurement seasons differ in respect of rice and wheat. The procurement of wheat commences in April and major part of procurement is over by end June. On the other hand, the procurement of paddy starts from Ist October and the bulk of procurement in the form of paddy is over by the end of December. However, procurement of rice in the form of levy rice continues; though at a reduced level, for the next few months. Taking these characteristics into account, the stock requirements for operational purposes for wheat and rice vary at different points of time. In respect of wheat, since the overwhelming operation of procurement is over by end June, the operational stocks have to last until the fresh stocks procured during the next Rabi procurement season are available in the godowns. Hence on 1st of July, the stocks for operational purposes in respect of wheat are required for a period of 12 months till the end of next June. Similarly, on Ist of October, the operational stocks will be required till the end of next June or, in other words, for 9 months. On Ist of January, the operational needs for wheat will be for 6 months till the end of next June. On 1st April, the operational needs would be for 3 months till the end of June. On the same basis, the operational stocks for rice should be maximum as on 1st January so as to last till the next December by which time newly procured rice stocks will be available in the depots. Hence the need for operational stocks of rice as on Ist January will be for 12 months. The operational stocks as on Ist April, Ist July and Ist October will correspondingly be required for 9 months, 6 months and 3 months respectively. Therefore, once the average monthly demand for rice and wheat for the public distribution system is known, it is easy to calculate the requirements of operational stocks at various points of time viz 1st April, 1st July, 1st October and 1st January based on the calculations mentioned above. It is to be noted that the leanest points of the need for operational stocks for wheat and rice are Ist April and Ist October respectively whereas the peak points of the operational needs for wheat and rice are 1st July and 1st January respectively.

4.25 The size of the operational stocks for rice and wheat at different points of time in the year should be as follows :—

	Rice	Wheat
1st April	9 month's requirements	3 month's requirements
1st July	6 „ „	12 „ „
1st October	3 „ „	9 „ „
1st January	12 „ „	6 „ „

4.26 Based on the above parameters and monthly requirements worked out as 4.90 lakh tonnes of rice and 7.00 lakh tonnes of wheat (indicated in para 4.21 above), the requirements of operational stocks for the Sixth Plan are projected as below :—

Table 2

Size of Operational Stocks

(Million tonnes)

As on	Rice	Wheat	Total
1st April	4·4	2·1	6·5
1st July	3·0	8·4	11·4
1st October	1·5	6·3	7·8
1st January	5·9	4·2	10·1

Total Stocks

4.27 The size of the total stocks (operational + buffer) at different points of time during the year has been estimated taking into account the contingency requirements arising out of one bad crop year creating stress in demand stretching over a period of two years. The estimates for the Sixth Five Year Plan are given in Table 3.

Table 3

Size of the Total Stocks

(a) Rice (Million tonnes)

As on	Buffer stocks	Operational Stocks	Total Stocks
1	2	3	4
Ist April	5·6	4·4	10·0
Ist July	5·6	3·0	8·6
Ist October	5·6	1·5	7·1
Ist January	5·6	5·9	11·5

1	2	3	4
(b) Wheat			
Ist April	7·0	2·1	9·1
Ist July	7·0	8·4	15·4
Ist October	7·0	6·3	13·3
Ist January	7·0	4·2	11·2
(c) Total (Rice+ Wheat)			
Ist April	12·6	6·5	19·1
Ist July	12·6	11·4	24·0
Ist October	12·6	7·8	20·4
Ist January	12·6	10·1	22·7

4.28 India is a sub-continent spread over a large area with a huge population base. Meeting the Food requirements of this vast country, is of foremost importance in the management of its economy. In a country of this size and population, the recovery from any swing in the economy caused by vicissitudes of nature requires considerable time. Also, the extent of this deviation being large, the responsibility of ensuring physical availability of the much needed foodgrains becomes more onerous and difficult. The sharp fluctuations in prices of foodgrains in the international market, the physical limitations on the capacity to import at short notice, apart from the outgo of sizeable amount of foreign exchange in case of purchase in foreign market, the international political situation, all emphasize the need for keeping adequate foodgrains stocks physically within the country in order to provide for sufficient food security. It is essential that the country should guard against the danger of being the victim of any tendency of food being used as a political weapon. Keeping in mind the necessity to meet current needs, and provide food security against swings in domestic availability, the Group recommends that the stocks levels indicated in Table 3 above, providing for a buffer stock of 12.6 million tonnes and total stocks ranging from 19.1 to 24.0 million tonnes at different points of time in a year, should be treated as the essential level of stocks required for smooth and efficient management of nation's food economy during the Sixth Five Year Plan.

4.29 For the period extending beyond the Sixth Plan period, the calculations can be up-dated by following the method of regression analysis adopted in this report making allowance for necessary changes in the explanatory variables in the light of the experience gained during the coming years. Projections for the year 1984-85 which would constitute the mid-point of the five year period (upto 1986-87) are shown in *Appendix* 3.

PART IV

MONITORING

4.30 In Part III above, the Group has given the estimate of necessary buffer stocks and total stocks levels, essential for the sound management of the food economy of the country. The Group felt that in view of the fact that no risk should be taken in such a vital matter as food, there should be adequate emphasis on the need for proper monitoring as sound food management calls for constant vigil and monitoring.

4.31 A study of the country's rainfall pattern indicates that usually at least one in five years is very bad in terms of rainfall, three are about normal and one is very good. Considering this background, if at any time the country has to be ready to face a situation of a serious drought year leading to severe shrinkage in procurement and spurt in the offtake from the public distribution system immediatly following the drought, and similar but less acute consequences in the succeeding year, the level of stocks indicated in Table 3 is essential and it is necessary that every effort should be made to build up physical stocks to that level. In the absence of stocks of these levels the stability in prices and supplies can get seriously disrupted shortly after the occurrence of the drought. It may also be borne in mind that it is not uncommon that one bad year is followed by another in succession. It also happens that in the three years of normal rainfall in the cycle of five years, referred to above, one may turn out to be very bad now and then. These extraordinary situations would be of exceptional hardship and would require stocks of higher magnitude than projected in this report.

4.32 The Group is of the view that in a situation when the country has faced a poor crop production year, and the levels of stocks indicated in Table 3 have started declining, a careful watch should be kept on the offtake under public distribution system, accretion to stocks through procurement and other related aspects of food management. When considered necessary, effective measures should be taken to conserve stocks by rationalising offtake under public distribution system, stricter control and regulation of food economy, cutting down other demands on the stocks and such other measures as may be considered appropriate. Export of foodgrains—whether under bilateral arrangements or under OGL should be brought under careful scrutiny. But soon after such a bad year is over, it will be extremely important not only to stop the erosion of stocks further, but also to take measures for their replenishment with a view to reaching the essential levels of buffer and total stocks indicated in Table 3 expeditiously.

4.33 If the declining trend continues leading to erosion in the buffer and the total stocks are likely to approach the levels indicated in Table 4 below, continuous monitoring of the entire gamut of food management should be set in motion. A constant review of the agricultural prospects and the procurement that is anticipated should be undertaken, the trends in the demand under public distribution system, the offtake and the price level should be watched, and stricter control and regulation of private trade enforced in respect of marketing, storage, stocks holding interzonal movement etc. Appropriate changes in the system of procurement should also be considered. Export of foodgrains should be totally stopped. If the crop prospects are normal or above normal, steps should be taken to replenish the stocks by intensive proceurement drive so as to reach as near the prescribed levels in Table 3 as possible. On the other hand, if the crop prospects are not encouraging, it would be time to exercise a judgement on all the attending circumstances, including the situation prevailling in the international market, to consider the question of import.

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Table 4

(Million tonnes)

	Rice	Wheat	Total
	1	2	3
As on Ist April			
Buffer Stock . . .	3·3	4·1	7·4
Operational Stock . . .	4·4	2·1	6·5
Total	7·7	6·2	13·9
As on Ist July			
Buffer Stock	3·3	4·1	7·4
Operational Stock . . .	3·0	8·4	11·4
Total	6·3	12·5	18·8

	1	2	3
As on Ist October			
Buffer Stock	3·3	4·1	7·4
Operational Stock	1·5	6·3	7·8
Total	4·8	10·4	15·2
As on Ist January			
Buffer Stock	3·3	4·1	7·4
Operational Stock	5·9	4·2	10·1
Total	9·2	8·3	17·5

The figures in the above Table have been arrived at taking into account the base level stocks and the observed gap between maximum distribution and minimum procurement for one year, (Taking n=1).

4.34 The Group while recommending the necessary buffer and total food stock levels as in Table 3, and cautioning against the drawing down of stocks to too low a level, has devoted considerable thought to the need for taking effective measures to build up the stocks. Looking to the present level of stocks and demands on these stocks, and further keeping in mind the present levels of procurement, the Group has an uneasy feeling that it is going to be a situation of living on the brink, unless total foodgrains availability is made easier by sufficiently high levels of production and stocks rebuilt. Imports can obviously not be a permanent feature of the food management of a country of the size of India; they can at best be measures to be adopted in situations of extreme shortages and exceptional deficiencies in internal production. The conclusion is obvious—there is no short-cut to food security but self-reliance. Food security must be built upon a secure and solid base of continuous rising production of the country, buttressed by effective system of procurement. Looking to the untapped potential in the agricultural sector in respect of utilization of land, raising productivity and harvesting the full potential of irrigation, supported by good management, the Group has no doubt that the Indian agriculture is capable of sustaining a dependable and viable food security system for the country.

4.35 In a situation of plentiful supply, and after the levels of buffer stock and total stocks needed for the food security of the country have been reached, it will be time to follow a policy of keeping the stocks at that stable level in normal years. Excess accretion to stocks through the implementation of the price support policy should be suitably handled by encouraging exports or by adopting other domestic measures to fulfil needs which, though not essential for food security, yet may otherwise be relevant.

PART V

ROLE OF STATE GOVERNMENTS

4.36 As per terms of reference, the Group is required to report on the role of the State Governments in holding a part of the stocks recommended in this report and the manner in which those would be held. The Group is conscious of the fact that the National Food Security and the overall regulation of the food economy of the country are the paramount duty of the Central Government. The Group is, therefore, clear in its mind that the buffer stocks should be maintained on the All-India basis with the Central agency i.e. the Food Corporation of India. The location of the stocks would naturally depend upon the availability of storage capacity, movement feasibility and the requirements of the various States depending on their food habits and whether they are surplus or deficit etc. The Group does not favour any State-wise break-up of these stocks as the patterns of supply and distribution are constantly changing.

As regards operational stocks, the holding, maintenance and operation of such stocks have to be a cooperative effort on the part of the Central and State Governments.

4.37 It would be necessary to take an integrated and unified view of the food economy of the country. While the food policy is laid down by the Central Government, it is implemented by the State Governments. The entire mechanism of procurement is operated through the system of Control Orders which are promulgated under the overall policy parameters laid down by the Central Government. Yet the role of the State Governments who enforce these measures is crucial. The procurement effort of the Food Corporation of India is supplemented to a very great extent by the State agencies, including the cooperative institutions. By and large, the State agencies procure and hold the foodgrains on behalf of the Food Corporation of India for which they are paid necessary charges. The [illegible] a very intimate contact between the Central integrated [illegible] State agencies so [illegible] as the procurement and storage of foodgrains is concerned.

4.38 Nevertheless, in some States foodgrains are held by the State agencies on their account for supplies through the public distribution system. Experience has shown operational difficulties in integrating these stocks with those in the Central Pool so far as management of the total stocks is concerned. Certain States sometimes enter into bilateral transactions and sell the procured stocks on commercial basis, thereby making profit on them.

4.39 The Group is convinced that the National Food Policy can be properly implemented only by the willing and ready participation of State Governments. What is good and beneficial in national interest will have to prevail; indeed, it will be in the interest of the states as well. The rationale of the measures to guard against deviations from National Policy and to enlist the cooperation of the State Governments in furtherance thereof emanates, therefore, not from any theoretical and academic considerations, but from the inherent nature of the situation.

4.40 In conclusion, the Group would like to emphasize that the implementation of the National Food Policy (of which procurement is an important element) should be done with utmost coordination between the Centre and the States and their agencies. While a State's effort in this respect is conducive to the spirit of self-reliance, at the same time such stocks as are held on State's account should also be reckoned in computing the National Food Balance Sheet. In the absence of such a system, the Central Government would be handicapped in playing an effective role in maintaining a balance and in ensuring a sound food management system for the country. The disposal of the stocks should be strictly in accordance with the framework of the policy laid down by the Central Government and the States should refrain from entering into bilateral transactions in relation to these stocks. Complete and regular information about the stocks procured and held by them from time to time must be furnished by the States to the Department of Food who alone can bring a national perspective to bear on the utilization thereof for serving the interests of the National Food Security.

CHAPTER 5

REQUIREMENTS OF STORAGE CAPACITY

5.1 The Technical Group considered the total requirements of storage capacity in connection with the buffer stocking policy of the foodgrains under the Sixth Five Year Plan. While considering the storage requirements, the Group was not in favour of creating excessive godown capacity only to be kept un-utilized or under-utilized. It was, however, recognised that the entire godown capacity could not be fully utilized. The experience of the Food Corporation of India was that even during the periods of peak stocks, the godowns were utilised to the extent of 70–85% capacity. Invariably, some space is required in the godowns for alleyways, storage of gunnies etc. Also, sometimes, full capacity of a particular godown cannot be utilized for various operational reasons. For instance, there are occasions when bags cannot be stacked to the required level. Large quantities of paddy have also some times to be carried in storage and these require disproportionately large space. There was also a possibility of the reduction of the size of the bags as per I.L.O. recommendations. The Group felt that, keeping all these factors in view, the storage requirement should be based on 75% average capacity utilisation.

5.2 Questions were raised as to whether the total storage capacity to be created, should correspond to the level of stocks (operational as well as buffer) as indicated in Table 3, or whether it should be at a somewhat lower level. In the latter case, was it possible that the spill-over, if any, could be taken care of by the margin in capacity utilization upto 85% or, if necessary, by resorting to CAP or temporary storage? In this connection, the Group noted that the level of foodgrains stocks with public agencies starts coming down after reaching the peak level by about end of June. Past experience has shown that between the peak level of stocks as on the 1st July of a year when the main rabi procurement opertions are over and that on the 1st October when Kharif procurement operations are to commence, there was a difference of about 3 million tonnes. Adjusting the maximum level of stocks of 24.0 million tonnes for this difference as on the 1st July of the year, the normal level of stocks would come to about 21 million tonnes. On the basis of the assumed storage capacity utilization of 75%, the total storage requirements for this quantity of 21 million tonnes would work out to 28 million tonnes. To meet the peak level storage requirement of 24 million tonnes, it may be possible to stretch the capacity utilization upto 85% and, if necessary, temporary storage can also be resorted to for a short period.

5.3 The total available owned storage capacity for foodgrains with the Government and the public sector organizations (FCI, CWC, SWCs & State Govts. etc.), exclusive of that under Agricultural Refinance Development Corporation assisted scheme, was about 11.18 million tonnes as on 1-4-80 (Details are shown in *Annexure* 6). The programme under the Sixth Plan is to add a further capacity of about 5.62 million tonnes. Thus, the total available owned storage capacity with the Government and the public sector agencies at the end of the Sixth Plan would be of the order of 16.80 million tonnes. Hence the gap in the covered capacity owned by the public sector agencies would be about 11.2 million tonnes (28.0—16.80=11.2 million tonnes). In the context of the above, the Group felt that the Sixth Plan target of storage capacity must be fulfilled.

5.4 A reference was also made in this connection to requirements of the 30 million tonnes of storage capacity worked out under the Sixth Plan. The storage requirement of 28 million tonnes now worked out by the Group differs from that calculated under the Sixth Plan because of the fact that, as discussed in para 5.2 foregoing, from the maximum level of total stocks worked out by the Group at 24.0 million tonnes, a peak level adjustment of about 3 million tonnes has been taken into account.

5.5 A question was also raised whether, for working out storage requirements, the foodgrains stocks in transit or under issue should also be taken into account. These were estimated to be of the order of about 1 million tonnes in aggregate. The Group has considered this matter and felt that the adjustment for the difference in the peak levels of stocks takes this also into account.

CHAPTER 6

FINANCIAL IMPLICATION

6.1 The cost of establishment and maintenance of buffer stock involves non-recurring and recurrnig expenditure. The non-recurring expenditure comprises the cost of construction of the requisite storage capacity and of the acquisition cost of foodgrains for the buffer stocks. The cost of the acquisition of foodgrains is primarily financed through cash credit facility. The recurring expenditure comprises interest charges on financing the cost of buffer stocks, storage charges, handling expenditure, freight, storage and transit losses and administrative overheads. The recurring expenditure, which in other words is the carrying cost of the buffer, is reimbursed to the Food Corporation of India.

6.2 The Government of India had constituted a Committee in March, 1977 under the Chairmanship of Secretary, Ministry of Finance (Department of Expenditure) to examine ways and means for rationalisation and reduction of the carrying cost of the buffer. Among the various aspects, the Committee went into the question of examining the principles for allocation of the total operational cost of the Food Corporation of India between the operational stocks and the buffer stocks. Arising out of the recommendations of the Committee in this regard and in consultation with the Comptroller & Auditor General of India, Government of India issued instructions laying down the principles for allocation of the total operational cost of the Food Corporation of India between the operational stocks and the buffer stocks under letter No. F. 3(3)/FF-1/77 dated 31-1-1979 (Copy at *Appendix* 4). These principles are presently being followed by the Food Corporation of India.

6.3 Based on the above principles and the current rate of interest of 12.50% for the cash credit facility, the carrying cost of buffer for 1982-83 has been estimated at Rs. 356.50 per tonne. The break-up of the same under various elements is as under :—

	(Rs. Per tonne
1. Transit losses	7·30
2. Storage losses	20·80
3. Freight	9·10
4. Handling expenses	20·60
5. Storage charges	78·30
6. Interest charges	202·20
7. Administrative overheads expenses	18·20
	356·50

The above average carrying cost of buffer per tonne of foodgrains is subject to fluctuations depending upon the procurement price, rate of interest, freight rates and the volume of operations etc.

Annual Carrying Cost of Buffer

6.4 Assuming the above rate towards carrying cost of buffer, the recurring expenditure per annum on maintenance of the proposed buffer stock of 12.6 million tonnes would be about Rs. 450 crores. In case there is a draw down on the buffer stock below this level, the carrying charges would correspondingly come down and would amount to about Rs. 264 crores per annum at current rates if the buffer stocks were to come down to the level of 7.4 million tonnes as per para 4.33 (Table 4)

6.5 Presently, the Food Corporation of India is assuming operational stocks as equivalent to 4 months offtake and the average buffer is derived after reducing operational stocks on this basis from the total stocks. Since the Group has now worked out the specific requirements of operational stocks at different points of time in the year separately for wheat and rice as in Chapter 4, the correct method would be to first identify the operational stocks on this basis from the total stocks each month and then work out the actual quantity of wheat and rice in the buffer. This method would have the advantage of determining the actual quantity held in buffer out of the total stocks and would straight-away indicate whether the requisite quantum of buffer is available in the Central Pool to enable action being taken for recouping the buffer or for alternative disposals if the desired level of buffer is exceeded.

Requirement of funds for financing the acquisition cost of buffer stocks and operational stocks.

6.6 For the proposed level of buffer stock of 12.6 million tonnes and operational stocks ranging from 6.5 million tonnes to 11.4 million tonnes at different points of time in the year, the requirement of funds for financing the acquisition cost of foodgrains would range from Rs. 3,625 crores as on 1st April when the total stocks would be at the lowest level of 19.1 million to Rs. 4,400 crores as on 1st July when the total stocks would be at the maximum level of 24 million tonnes. The requirement of funds has been worked out at the current procurement prices and would change in case the procurement prices undergo an upward revision. The requirement of funds separately for wheat and rice and for buffer and operational stocks, as also for the total stocks, is indicated in the Table 5 below :—

Table 5

Acquisition cost*

Rice @Rs. 208·33 per quintal.
Wheat @Rs. 169·36 per quintal.
Qty. in million tonnes.
Value : Rs. in crores.

	Buffer Stocks		Operational Stocks		Total	
	Qty	Value	Qty	Value	Qty	Value
(a) Rice						
Ist April	5·6	1166·65	4·4	916·65	10·0	2083·30
Ist July	5·6	1166·65	3·0	624·99	8·6	1791·64
Ist October	5·6	1166·65	1·5	312·50	7·1	1479·15
Ist January	5·6	1166·65	5·9	1229·15	11·5	2395·80
(b) Wheat						
Ist April	7·0	1185·52	2·1	355·66	9·1	1541·18
Ist July	7·0	1185·52	8·4	1422·62	15·4	2608·14
Ist October	7·0	1185·52	6·3	1066·97	13·3	2252·49
Ist January	7·0	1185·52	4·2	711·31	11·2	1896·83
(c) Total (Rice + Wheat)						
Ist April	12·6	2352·17	6·5	1272·31	19·1	3624·48
Ist July	12·6	2352·17	11·4	2047·61	24·0	4399·78
Ist October	12·6	2352·17	7·8	1379·47	20·4	3731·64
Ist January	12·6	2352·17	10·1	1940·46	22·7	4292·63

*Based on estimates for the year 1982-83 as on 1-7-1982.

6.7 In case there is a draw down on the buffer stocks below the proposed level of 12.6 million tonnes and the same reaches the level of 7.4 million tonnes as per para 4.33 (Table 4), the requirement of funds for financing the acquisition cost of buffer and operational stocks at different points of time in the year at current procurement prices would be as indicated in the Table 6 below :—

Table 6

Acquisition cost*

Rice@Rs. 208·33 per quintal.
Wheat@Rs. 169·36 per quintal
Qty. in million tonnes.
Value: Rs. in crores

	Buffer Stocks		Operational Stocks		Total	
	Qty.	Value	Qty.	Value	Qty.	Value
(a) Rice						
Ist April	3·3	687·49	4·4	916·65	7·7	1604·14
Ist July	3·3	687·49	3·0	624·99	6·3	1312·48
Ist October	3·3	687·49	1·5	312·50	4·8	999·99
Ist January	3·3	687·49	5·9	1229·15	9·2	1916·64
(b) Wheat						
Ist April	4·1	694·38	2·1	355·66	6·2	1050·04
Ist July	4·1	694·38	8·4	1422·62	12·5	2117·00
Ist October	4·1	694·38	6·3	1066·97	10·4	1761·35
Ist January	4·1	694·38	4·2	711·31	8·3	1405·69
(c) Total Stocks (Rice+ Wheat)						
Ist April	7·4	1381·87	6·5	1272·31	13·9	2654·18
Ist July	7·4	1381·87	11·4	2047·61	18·8	3429·48
Ist October	7·4	1381·87	7·8	1379·47	15·2	2761·34
Ist January	7·4	1381·87	10·1	1940·46	17·5	3322·33

*Based on estimates for the year 1982-83 as on 1-7-1982.

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CHAPTER 7

SUMMARY OF RECOMMENDATIONS

1. The Technical Group on the Buffer Stocking Policy of foodgrains is of the unanimous view that a buffer stock of foodgrains is needed to serve as an insurance against crop failures or other contingencies and to ensure inter-seasonal stability in supplies and prices which would safe-guard the interests of the producers as well as consumers, particularly vulnerable sections of the population.

2. For the purpose of conceptual clarity and for proper monitoring and management, the Group feels that the total food stocks should comprise two categories, viz

   (1) Buffer stocks consisting of—
      (a) Base level stocks, and
      (b) Food security stocks.

   (2) Operational stocks

3. There is limited scope of inter-changeability between rice and wheat through the public distribution system from the consumer acceptability point of view and as such wheat and rice in required quantities should be kept as two distinct components of the stocks.

4. A consistent and realistic framework for estimating the required public stocks of foodgrains in the country must have relevance to both the levels of procurement and the needs of the public distribution system, as the gaps between the quantities issued through the public distribution system in a year and those procured by the public agencies have to be met out of buffer stocks available with the public agencies.

5. Stress in demand for foodgrains from Public Distribution System, resulting from shortfall in production in a year, does not remain confined to that year alone; it is spread over a two-year time frame. The Group considers this fact to be of paramount importance to be always borne in mind while examining the question of the required stocks for food security purposes.

6. The size of the buffer stock which is intended to meet the estimated shortfalls on account of one year of crop failures should be 12.6 million tonnes comprising 7.0 million tonnes of wheat and 5.6 million tonnes of rice.(*)

7. The buffer stocks of the size indicated above will be in addition to the operational stocks which on different dates in the year are recommended as under :—

(In Million tonnes)

Operational stocks:

	Wheat	Rice	Total
Ist April	2·1	4·4	6·5
Ist July	8·4	3·0	11·4
Ist October	6·3	1·5	7·8
Ist January	4·2	5·9	10·1

8. The total requirement of stocks (buffer as well as operational) with the public agencies is recommended* as under on different points of time in the year :—

(In Million tonnes)

	Wheat	Rice	Total
Ist April	9·1	10·0	19·1
Ist July	15·4	8·6	24·0
Ist October	13·3	7·1	20·4
Ist January	11·2	11·5	22·7

9. Sound food management calls for constant vigil and monitoring, and, therefore, there is need for proper monitoring.

10. The total requirement of storage capacity for foodgrains with the Government and the public agencies at the end of the Sixth Plan period is estimated at 28 million tonnes.

(—) A Note of Dissent by one of the members—Dr. Mahfooz Ahmed is at the end of the Report.

11. Buffer stocks should be maintained on All-India basis with the Central agency i.e. food Corporation of India. The Group is not in favour of showing any state-wise break-up of these stocks. However, holding of operational stocks, their maintenance and operations have to be a cooperative effort on the part of the Central and State Governments.

12. It is necessary to take an integrated and unified view of the food economy of the country and implementation of the National Food Policy should be done with utmost coordination between the Central and Sstate Governments and their agencies. In this connection, stocks held both on the Central and State accounts should be reckoned in computing the National Food Balance Sheet and the disposal of these stocks should be strictly in accordance with the National Food Policy.

13. There is no short cut to food security but self-reliance. The national food security must be built upon a secure and solid base of continuously rising production within the country, buttressed by effective system of procurement and distribution.

(B. C. GANGOPADHYAY)
Chairman

(K.C.S. ACHARYA) Member	(S.K.S. CHIB) Member	(Dr. K. KANUNGO) Member
(Dr. MAHFOOZ AHMED)* Member	(H.L. CHAWLA) Member	(S.V. SASTRY) Member
(G.V. VISWANATH) Member	(R.R. BHATIA) Member-Secretary	

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*Subject to the Note of Dissent.

NOTE OF DISSENT BY DR. MAHFOOZ AHMED

I do not agree with the conclusions of the other members of the Technical Group on the *size* of the foodgrains stocks, nor with the thrust of the arguments in parts II, III and IV of the Chapter 4 and hence this note of dissent.

The maintenance of foodgrains stock is a costly proposition and its level cannot be determined without reference to the financial feasibility of building and maintaining the stock. Complete risk aversion is possible only when resources are abundant, but in a situation of resources scarcity acceptable risks have to be taken to avoid unnecessary cost and blocking huge funds in foodgrains stocks that may not be needed. The extent of hedging against the risk of crop failure should also be based on the normal intensity of crop failure and their consequential requirements and not on exceptional events of crop failure. Nor should we forclose or belittle the potential of available alternative policy options.

I firmly believe the calculations of foodgrains stocks based on taking n=1 (the deviation between maximum off-take and minimum procurement during last five years) provide adequate security against crop failure after making full provision for the public distribution system for 12 months. Besides, added caution has been built in at various stages. On the basis of these calculations the required level of foodgrains stocks separately for rice and wheat at four points of time in the year are given in the following Table :

Required level of foodgrains Stocks of Rice and Wheat

	Buffer Stocks	Operational Stocks	Total
	WHEAT		
Ist April	4·1	2·1	6·2
Ist July	4·1	8·4	12·5
Ist October	4·1	6·3	10·4
Ist January	4·1	4·2	8·3
	RICE		
Ist April	3·3	4·4	7·7
Ist July	3·3	3·0	6·3
Ist October	3·3	1·5	4·8
Ist January	3·3	5·9	9·2
	TOTAL		
Ist April	7·4	6·5	13·9
Ist July	7·4	11·4	18·8
Ist October	7·4	7·8	15·2
Ist January	7·4	10·1	17·5

It may be noted that the required level of foodgrains stocks at four points of time in a year during the Sixth Plan period amount to between 14 million tonnes (as on 1st April) and 19 million tonnes (as on 1st July). Of the total, the level of buffer stocks (food security plus base level stocks) is about 7.4 million tonnes. These level of stocks in my view are *essential* for maintaining the viability of the public distribution system and provide adequate caution against crop failure. The foodgrains stocks must not be allowed to fall below these levels.

It is possible that as a result of consecutive good crop, actual stocks may exceed the required level given in the above Table. It is, therefore, necessary to consider the *maximum* level of stock beyond which stocks must not be allowed to accumulate. Such a maximum may be estimated by taking n = 2, i.e. by taking twice the maximum difference between the amount procured and distributed. The maximum levels of stock during the year will vary from 19 million tonnes as on 1st April to 24 million tonnes as on 1st July.

In my view the above estimates of essential stocks are themselves optimistic and have been padded up by building in added degree of caution. For example, the stocks for food security are computed by taking the difference between the minimum procurement and the highest off-take for public distribution during the last five years. This period contains the severe drought year 1979-80. The probability of the recurrence of drought of such intensify cannot be regarded as very high. Further, n = 1 does not strictly represent one crop failure because the difference between procurement and distribution does not relate to the same year. As it represents the worst scenerio involving most pessimistic assumptions in respect of both procurement and distribution, it duly takes into account the consequential requirement of a crop failure which often spills over into the second year which is relevant in case of wheat. Besides, the estimates of buffer stocks (food security stocks plus base level stocks) also take account of about 2.2 million tonnes (1 million tonnes of rice and 1.2 million tonnes of wheat) for base level stocks as a measure of extra precaution. The total buffer stock thus works out to 7.4 million tonnes which is over and above the full requirement of the public distribution system for 12 months.

In fact, even in calculating the operational requirement of wheat and rice for 12 months from the onset of the procurement season extra caution has been built in. This is done by taking opening stocks both of rice and wheat equal to 3 months' requirement of public distribution system (as against 2 months' taken by the earlier Technical Group of 1975) at the beginning of the respective procurement seasons for rice and wheat.

Another source of caution in estimating both buffer stock and operational stock is the use of data which include the provision (about 4 million tonnes in two years) for the Food For Work Programme/National Rural Employment Programme. The use of unadjusted data not only exaggerates the maximum difference between procurement and off-take which is the basis of estimating the degree of cushion for food security but also inflates the average monthly off-take which forms the basis of calculating the operational stock for the public distribution system. The Report clearly regards the requirement for such employment generation programme as additional hence do not form a part of the estimated foodgrains stock.

In my view determining the essential size of foodgrains stock by taking n = 2 as is done in the Report reflects a preference for complete risk aversion and reflects exaggerated degree of caution.

An important justification for taking n = 2 as the basis of calculation as given in the Report is that one crop failure often leads to spill over effect into the second year. While this may be true for wheat where it may be necessary to provide for more than 12 months' requirements of the public distribution system, the crop cycle in regard to rice does not imply any such spill over effect.

The exaggerated degree of caution, besides neglecting the feasibility of earmarking the huge financial resources as worked out in Chapter 6, also does not take into account the possible role of the available alternative policy options which could be deployed depending upon the intensity of the crop failures. Under the given pattern and timing of monsoon in the country it is possible to form broad judgment about the degree of abnormality of monsoon by the month of July and August. The cushion provided by 7.4 million tonnes of buffer stock over and above full provision of 12 months' operational stock and the advance judgment on the abnormality of monsoon gives sufficient time for planning and executing necessary policies for replenishing the expected draw down of stocks and to meet the spill over requirements by imports and other measures.

The financial implications have been presented in Chapter 6. It is evident that the cost of carrying the 12.6 million tonnes foodgrains stocks at present rates as worked out in the Report comes to about Rs. 450 crores as against Rs. 264 crores for carrying 7.4 million tonnes. The bank credit requirement for maintaining the maximum level of foodgrains stocks of 24 million tonnes as suggested in the Report would be as high as Rs. 4400 crores. This can be contrasted with Rs. 3429 crores and about Rs. 2400 crores respectively for the levels suggested in this note and the existing levels of stocks. Obviously, the additional resource requirement at the suggested level are extremely large and may not be forthcoming without further disturbing the existing investment programmes and priorities in the country.

I agree that continuous monitoring of the foodgrains stock situation is an essential element of the buffer stocking, procurement and distribution policies. Indeed, such a monitoring is necessary and would enable appropriate timing of the necessary policy actions. Policy actions must depend on the anticipated trends and should not wait until the specified *essential* and *maximum* limits are reached. For example, appropriate policies must be deployed when it is noted that the *actual* level of stocks although higher than the required level is tending to approach the required level. Similarly, when foodgrains stocks are tending to grow faster and threaten to exceed the maximum level, steps must be taken well in advance to unload these stocks.

Dated 2nd November, 1982

Dr. MAHFOOZ AHMED

Member

ANNEXURES
&
APPENDICES

ANNEXURE 1

(Para 1·2 refers)

Composition of the Technical Group-List of Members.

(i)	Secretary (Food) (Shri B. C. Gangopadhyay) Department of Food.	Chairman
(ii)	Additional Secretary (Food) (Shri B.S. Raghavan)* Department of Food.	Member
(iii)	Managing Director (Shri K. V. Seshadri) (1) Food Corporation of India, New Delhi.	Member
(iv)	Additional Secretary (Incharge of Production) (Shri R. C. Sood) (2) Department of Agriculture.	Member
(v)	Adviser (Agriculture) (Dr. K. Kanungo) Planning Commission, New Delhi.	Member
(vi)	Joint Secretary & Financial Adviser (Shri S. V. Sastry) Department of Food	Member
(vii)	Joint Secretary (D&R) (Shri K. C. S. Acharya) (3) Department of Food.	Member
(viii)	Economic Adviser Ministry of Finance (Department of Economic Affairs) (Dr. Mahfooz Ahmed) (4)	Member
(ix)	Economic and Statistical Adviser (Shri H. L. Chawla) Directorate of Economics & Statistics Ministry of Agriculture.	Member
(x)	Deputy Secretary (Food) (Shri S. K. Kayal) (5) Department of Food	Member-Secretary

*Proceeded on leave with effect from 14-9-1982.

(1) Succeeded by Shri B. S. Raghavan from 30-11-81 to 25-2-1982 and Shri S. K. S. Chib with effect from 26-2-1982.

(2) Succeeded by Shri K. C. S. Acharya with effect from 25-11-81.

(3) Succeeded by Shri M. Subrahmanyam with effect from 1-10-81 and upto 10-4-82 & Shri G. V. Viswanath with effect from 3-5-82.

(4) Included vide Memorandum No. 9-3/80 B. P. I. dated 20th September 1981.

(5) Succeeded by Shri R. R. Bhatia with effect from 9-12-81

सत्यमेव जयते

ANNEXURE 2

(Para 2·5 refers)

Statement showing Procurement of Kharif and Rabi Foodgrains during 1967-68 to 1981-82—Marketing Seasons

(In '000 tonnes)

Year	Kharif Foodgrains (October-September)		Rabi Foodgrains (April-March)	
	Rice	'Coarse Grains	Total	Wheat
1967-68 . . .	3233	775	4008	893
1968-69 . . .	3433	464	3897	2298
1969-70 . . .	2943	274	3217	2387
1970-71 . . .	3196	491	3685	3192
1971-72 . . .	3116	181	3297	5101
1972-73 . . .	2706	311	3017	5006
1973-74 . . .	3887	387	4274	4531
1974-75 . . .	3795	302	4097	1955
1975-76 . . .	6322	310	6632	4049
1976-77 . . .	4431	221	4652	6602
1977-78 . . .	4853	19	4872	5165
1978-79 . . .	6334	125	6459	5478
1979-80 . . .	3851	111	3962	8000
1980-81 (P) . .	5572	101	5673	5860
1981-82 (P) . .	7186	212	7398	7654

*(Upto 31.7.82)

(P) Provisional, subject to revision.

सत्यमेव जयते

ANNEXURE 3

(Para 2·5 refers)

Total Distribution of Foodgrains during the Financial Years 1967-68 to 1981-82

(In '000 tonnes)

Year	Rice	Wheat	Coarse Grains	Total
1967-68 . . .	3010	7079	2477	12566
1968-69 . . .	3256	5569	1020	9845
1969-70 . . .	3407	5463	763	9633
1970-71 . . .	2865	4967	325	8157
1971-72 . . .	3406	4919	146	8471
1972-73 . . .	3674	6630	440	10744
1973-74 . . .	3226	6897	1304	11427
1974-75 . . .	3776	6152	1186	11114
1975-76 . . .	3003	6919	344	10266
1976-77 . . .	4057	5534	585	10176
1977-78 . . .	4317	7062	637	12016
1978-79 . . .	3199	6749	74	10022
1979-80 . . .	4877	8042	121	13040
1980-81 . . .	5884	7512	148	13544
1981-82 . . .	6744	6676	163	13583

सत्यमेव जयते

ANNEXURE 4

(Para 2·5 refers)

Total Stocks of Foodgrains with the Public Agencies as on 1-4-1967 to 1-7-82

(In '000 tonnes)

As on	Rice	Wheat	Coarse Grams	Total
1-4-67	841	674	549	2064
1-7-67	669	779	544	1992
1-4-68	1432	879	694	3005
1-7-68	1254	1844	845	3943
1-4-69	2066	1897	553	4516
1-7-69	1888	3183	401	5472
1-4-70	2371	1604	243	4218
1-7-70	1911	3440	177	5528
1-4-71	2859	2443	450	5752
1-7-71	2521	5418	455	8394
1-4-72	2877	3533	424	6834
1-7-72	2408	6152	348	8908
1-4-73	1637	716	251	2604
1-7-73	1218	3087	193	4498
1-4-74	2056	907	576	3539
1-7-74	1626	2145	432	4203
1-4-75	1885	1228	223	3336
1-7-75	1593	4210	161	5964
1-4-76	4738	5088	933	10759
1-7-76	5120	11659	904	17683
1-4-77	6355	11174	744	18273
1-7-77	5592	14642	513	20747
1-4-78	6675	8648	112	15435
1-7-78	6577	2229	105	18911
1-4-79	9707	6310	150	16167
1-7-79	9627	11728	149	21504
1-4-80	8443	5319	149	13911
1-7-80	7090	9003	141	16234
1-4-81	6694	3069	111	9874
1-7-81	5839	7733	103	13675
1-4-82(P)	6361	4529	167	11057
1-7-82 (P)	5122	10147	195	15464

(P) Provisional

ANNEXURE 5

Coverage of Public Distribution System-Statement showing the Number of Fair Price/Ration Shops with break-up in Urban and Rural areas*

S. No.	State/Union Territories	Number of Fair Price Shops			As on
		Urban	Rural	Total	
1	2	3	4	5	6
1.	Andhra Pradesh . .	5425	24681	30106	30-6-82
2.	Assam	1875	12666	14541	31-7-82
3.	Bihar	6599	30543	37142	30-6-82
4.	Gujarat	2638	7345	9983	31-8-82
5.	Haryana . . .	1328	3994	5322	31-8-82
6.	Himachal Pradesh . .	208	2534	2742	30-6-82
7.	J & K	617	1545	2162(P)	31-12-81
8.	Karnataka . . .	3810	10520	14330(P)	31-5-82
9.	Kerala	2133	9583	11716	31-5-82
10.	Madhya Pradesh . .	4509	12529	17038	31-7-82
11.	Maharashtra . . .	6859	22797	29656	31-7-82
12.	Manipur	122	1019	1141	31-8-82
13.	Meghalaya . . .	320	1403	1723	31-3-82
14.	Nagaland . . .	113	59	172	28-2-82
15.	Orissa	2808	14152	16960(P)	31-5-82
16.	Punjab	2160	8600	10760	31-7-82
17.	Rajasthan . . .	2300	8145	10445	31-7-82
18.	Sikkim	—	926(P)	926(P)	31-12-81
19.	Tamil Nadu . . .	1999	15667	17666	31-7-82
20.	Tripura	84	743	827	31-3-82
21.	Uttar Pradesh . .	7187	12290	19477	30-6-82
22.	West Bengal . . .	5270	13255	18525	31-5-82
23.	A&N Island . . .	45	150	195	30-6-82
24.	Arunachal Pradesh . .	42	167	209(P)	30-9-82
25.	Chandigarh . . .	146	56	202	31-1-82
26.	D & N Haveli . . .	—	40	40	31-8-82
27.	Delhi	2574	295	2869	31-3-82
28.	Goa, Daman & Diu . .	100	289	389	30-6-82
29.	Mizoram	98	294	392	31-5-82
30.	Lakshdweep . . .	11	13	24	31-8-82
31.	Pondicherry . . .	92	86	178	30-9-82
	Total (All India) . .	61472	216386	277858	

(P)— Provisional, subject to revision

(*)— Position as available on 19-10-1982

ANNEXURE 6

(Para 5·3 refers)

The Owned Storage Capacity Available with the Public Agencies for Storage of Foodgrains as on 1-4-1980

Agency	Capacity (In million tonnes)
1. Food Corporation of India	7·59
2. Central Warehousing Corporation	0·98
3. State Warehousing Corporations	1·20
4. State Governments	1·15
5. MARKFED	0·20
6. HAFED	0·06
Total :	11·18

सत्यमेव जयते

APPENDIX—1

(Para 4.4 refers)

Estimates of total stocks of foodgrains on the basis of demand and supply projections :

The size of the total stocks has been estimated on the basis of the study of the deviations in supply and demand for the period 1960-61 to 1979-80. For this purpose two exercises have been made. In *Exercise* 1 the net production of cereals available for human consumption has been estimated at 87.5 per cent of the gross output and the balance 12.5 per cent representing seed, feed requirements and wastage. The levels of demand for each of these years have been worked out taking into account the average annual per capita availability of 149.2 kg./year observed during the period 1976-80, as the base level and multiplying the same by population. The figures of estimated demand and deviations in net production over demand are indicated in Statement—A.

In Exercise 2, apart from the increase in population, cognizance has been taken of the changes in incomes and the income elasticity of demand for cereals (0.32680 as adopted by the National Commission of Agriculture—NCA's Report, 1976, Part III, Demand and Supply p. 34). The figures of production, estimated demand and deviations in demand from production are indicated in Statement—B.

The mean of deviations between production and demand and the standard deviations (SD) thereof have been worked out and the following calculations have been made :—

(i) Mean + I SD

(ii) Mean + 2 SD

(i) indicates the quantum of cereals that would have been required to meet the shortfall in supplies in two out of three years and (ii) represents the quantum that is needed to cover the deficit in 19 out of 20 years. The size of the total stock for meeting the situations of shortfall during the period 1960-61 to 1979-80 works out as follows :—

Exercise 1

	Size of the stock (million tonnes)	Stock as percentage of demand (81 ·54 million tonnes—average for 1961-80)
(i) Mean + 1 SD	11 ·7	14 ·3
(ii) Mean + 2 SD	18 ·2	22 ·3

Exercise 2

	Size of the stock (Million tonnes)	Stock as percentage of demand (79 ·3 million tonnes—average of 1961-80)
(i) Mean + 1 SD	8 ·4	10 ·6
(ii) Mean + 2 SD	13.8	17.4

As regards the Sixth Plan period 1980–85, the fluctuations in production in absolute terms [illegible] larger as the overall size of the crop will be higher than in the past. On the other hand, the larger concentration of production in irrigated areas which are less prone to fluctuations due to weather conditions would help in moderating them. It would, therefore, be proper to assume that the amplitude of fluctuations during the Sixth Plan period will be more or less of the same order as observed during the period under study. On this basis, the size of the total stock needed for the Sixth Plan has been estimated by applying the percentage mentioned in the preceding para to the projected demand of 109.68 million tonnes which is the average demand for five years in the Sixth Plan. The size of the total stock thus obtained from the two exercises for the Sixth Plan period are as follows :—

integrated

Exercise 1

(i) Mean + 1 SD	15 ·68 million tonnes or 16 million tonnes.
(ii) Mean + 2 SD	24 ·46 million tonnes or 24 ·5 million tonnes.

Exercise 2

(i) Mean + 1 SD	11 ·63 million tonnes or 12 million tonnes.
(ii) Mean + 2 SD	19 ·08 million tonnes or 19 million tonnes.

From the above it will be seen that for meeting shortage in two out of three years the size of the total stock required would be 16 million tonnes (Exercise 1) and 12 million tonnes (Exercise 2). For meeting fluctuations in supplies in 19 out of 20 years the total stock requirement is estimated at 24.5 million tonnes (Exercise 1) and 19 million tonnes (Exercise 2).

STATEMENT-A: Production, Estimated Demand and Deviation in Net Production over Demand for Cereals

(Million Tonnes)

Year	Population (Million persons)	Demand of cereals based on per capita availability @149·2 Kg/ year (Average 1976-80)	Net Production of cereals (87·5% of gross production)	Deviation Net Production over demand
1961 . . .	439·24	65·5	60·6	—4·9
1962 . . .	449·07	67·0	62·1	—4·9
1963 . . .	459·13	68·5	60·0	—8·5
1964 . . .	469·42	70·0	61·8	—8·2
1965 . . .	479·93	71·6	67·3	—4·3
1966 . . .	490·68	73·2	54·6	—18·6
1967 . . .	501·67	74·9	57·7	—17·2
1968 . . .	512·91	76·5	72·6	—3·9
1969 . . .	524·40	78·2	73·2	—5·0
1970 . . .	536·15	80·0	76·8	—3·2
1971 . . .	548·16	81·8	84·5	+2·7
1972 . . .	560·42	83·6	82·3	—1·3
1973 . . .	572·95	85·5	76·2	—9·3
1974 . . .	585·76	87·4	82·9	—4·5
1975 . . .	598·86	89·4	78·6	—10·8
1976 . . .	612·25	91·4	94·5	+3·1
1977 . . .	625·94	93·4	87·3	—6·1
1978 . . .	639·93	95·5	100·1	+4·6
1979 . . .	654·24	97·6	104·7	+7·1
1980 . . .	668·87	99·8	87·9	—11·9

STATEMENT-B

Production, Estimated Demand and Deviations in Net Production over Demand for Cereals

Year	Per capita-Natio-nal Pro-duct Rs. (At 1970-71 prices)	Growth rate	Growth rate of Elasti-city of demand/ for ce-reals (0·32680)	Per capi-ta avail-ability of cereals (kgs.)	Popula-tion (mil-lion per-sons)	Demand for ce-reals (Million Tonnes)	Gross produc-tion of cereals (Million Tonnes)	Net* pro-duction (Million Tonnes)	Devia-tion in net pro-duction over de-mand (Col. 9—Col. 7)
1	2	3	4	5	6	7	8	9	10
1979-80	677·8			149·20	668·87	99·80	100·5	87·9	—11·9
1978-79	727·6	+7·3	+2·39	152·76	654·24	99·94	119·7	104·7	+4·8
1977-78	701·0	—3·7	—1·21	150·91	639·93	96·57	114·4	100·1	+3·5
1976-77	659·2	—6·0	—1·96	147·95	625·94	92·61	99·8	87·3	—5·3
1975-76	663·6	+0·7	+0·23	148·29	612·25	90·79	108·0	94·5	+3·7
1974-75	617·6	—6·9	—2·25	144·95	598·86	86·80	89·8	78·6	—8·2
1973-74	621·2	+0·6	+0·20	145·24	585·76	85·00	94·7	82·9	—2·2

1	2	3	4	5	6	7	8	9	10
1972-73	604·1	—2·8	—0·92	143·90	572·95	82·45	87·1	76·2	—6·2
1971-72	626·6	+3·7	+1·21	145·64	560·42	81·62	94·1	82·3	+0·7
1970-71	632·8	+1·0	+0·33	146·12	548·16	80·10	96·6	84·5	+4·4
1969-70	612·6	—3·2	—1·04	144·60	536·15	77·53	87·8	76·8	—0·7
1968-69	589·1	—3·3	—1·24	142·81	524·40	74·89	83·6	73·2	—1·7
1967-68	587·3	—0·3	—0·10	142·67	512·91	73·18	83·0	72·6	—0·6
1966-67	551·5	—6·1	—1·99	139·83	501·67	70·15	65·9	57·7	—12·5
1965-66	558·8	+1·3	+0·42	140·42	490·68	68·90	62·4	54·6	—14·3
1964-65	607·8	+8·8	+2·88	144·46	479·93	69·33	76·9	67·3	—2·0
1963-64	576·4	—5·2	—1·70	142·00	469·42	66·66	70·6	61·8	—4·9
1962-63	559·8	—2·9	—0·95	140·65	459·13	64·58	68·6	60·0	—4·6
1961-62	563·9	+0·7	+0·23	140·97	449·07	63·30	71·0	62·1	—1·2
1960-61	558·8	—0·9	—0·29	140·56	439·24	61·74	69·3	60·6	—1·1

*Calculated at 87·5% of gross production.

APPENDIX 2

(Para 4.21 refers)

Regression Analysis of the Demand for Foodgrains for Public Distribution

Based on the time series data from 1970-71 to 1980-81, an attempt was made to establish a quantitative relationship between the quantity of foodgrains distributed through public distribution system and the relevant explanatory variables. Several regression equations were estimated and it was found that compared with the non-linear equation, the linear one gave a better fit to the data. The equations estimated for rice and wheat are as follows :

(i) $$PDR = 1181{\cdot}65 + \underset{(0{\cdot}839)}{526{\cdot}152}\ FPS/N + \underset{(1{\cdot}813)}{2{\cdot}9135}\ Y$$

$$\overline{R}^{2} = 0{\cdot}50$$

(ii) $$PDW = 1813{\cdot}34 + \underset{(1{\cdot}756)}{10694}\ FPS/N + \underset{(0{\cdot}632)}{0{\cdot}9870}\ Y$$

$$\overline{R}^{2} = 0{\cdot}61$$

(Figures in parenthesis indicate 't' values of the coefficients)

Here

PDR = Quantity of rice distributed through public distribution system.

PDW = Quantity of wheat distributed through public distribution system.

FPS/N = Number of fair price shops per thousand of population.

Y = Per capita private consumption expenditure at current prices.

On the basis of estimated equations, quantities of rice and wheat required for public distribution system were estimated for 1982-83 and 1984-85, the middle and final years of the Sixth Five Year Plan. In estimating these requirements, it was assumed that the number of fair price shops will grow at the rate of 7 per cent per annum. The growth rates assumed for population and per capita private consumption expenditure were 2.26 and 10.0 per cent per annum respectively. Based on this, the estimated average monthly requirement of public distribution system for 1982-83 work out to 4.9 lakh tonnes for rice and 7.0 lakh tonnes for wheat. For 1984-85, these figures work out to 5.8 lakh tonnes for rice and 7.7 lakh tonnes for wheat.

APPENDIX 3

(Para 4·29 refers)

Size of the Total Stocks for Five-Year period ending 1986-87

(Million tonnes)

	Buffer Stocks	Operational Stocks	Total Stocks
(a) Rice			
As on			
Ist April	5·6	5·2	10·8
Ist July	5·6	3·5	9·1
Ist October	5·6	1·7	7·3
Ist January	5·6	6·9	12·5
(b) Wheat			
As on			
Ist April	7·0	2·3	9·3
Ist July	7·0	9·2	16·2
Ist October	7·0	6·9	13·9
Ist January	7·0	4·6	11·6
(c) Total (Rice+Wheat)			
As on			
Ist April	12·6	7·5	20·1
Ist July	12·6	12·7	25·3
Ist October	12·6	8·6	21·2
Ist January	12·6	11·5	24·1

APPENDIX 4

(Para 6.2 refers)

No. F.3(3)/FF.I/77
Government of India
Ministry of Agriculture & Irrigation
Department of Food.

New Delhi-1, the 31st January, 1979

To

The Managing Director,
Food Corporation of India,
16-20 Barakhamba Lane,
New Delhi.

SUBJECT :—Allocation of costs between normal operations and buffer stocks—Principles regarding.

Sir,

I am directed to state that a sub-group was constituted to examine the principles for allocation of total costs by the Food Corporation of India between the operational stocks and buffer stocks. The report of the sub-group and also the suggestions of FA(FCI) and CCAO in this regard were considered by the Committee set up by the Government of India to examine ways and means of reduction in the cost of maintenance of buffer stocks of foodgrains and it decided to refer the various suggestions to the Controller and Auditor General of India for his expert advice. After taking into account the views expressed by the C & AG, it has been decided that the following principles should be adopted in the allocation of the total cost between the operational stocks and buffer stocks.

1. *Transportation Cost* :

Transportation costs should be allocated in the first year in the ratio of sales plus operational stocks to average buffer. In the subsequent years, the allocation should be in the ratio of sales plus accretion to operational stocks : accretion to buffer (Accretion in the case of both buffer and operational stocks would be with reference to the highest level reached earlier).

Transit Losses :

The same principle as for transportation costs should also be applied in the case of transit losses.

. *Handling charges* :

The distribution of handling charges may be made in the tio of sales plus average operational stock : average buffer ck.

torage charges :

These charges may be apportioned in the ratio of operational ock ; average buffer stock (in term of quantity).

Storage losses :

Storage losses may be apportioned in the ratio of average perational stocks : average buffer stocks, on value basis.

6. *Interest charges* :

The interest on the value of average buffer stock should be rst worked out at the appropriate rate of borrowing and the mount so determined should be charged to the average buffer tock. The balance amount of interest should be taken as repre-nting the interest charges to be allocated to operational stock.

Administrative Charges :

Administrative charges may be allocated on the basis of ratio of sales : average buffer stock for the first year and the ratio of sales plus average operational stock : average buffer stock for the ubsequent years.

Kindly acknowledge receipt.

Yours faithfully,
Sd/-
(P. A. C. RAO)
Under Secretary to the Govt. of India.